

**Final  
Site-Specific Safety and Health Plan Attachment  
For Range 29,  
Former Weapons Demonstration Range, Parcel 87Q-X,  
Former Rifle Ranges, Parcels 110Q and 111Q, and  
Former Impact Area, Parcel 239Q-X  
Fort McClellan  
Calhoun County, Alabama  
EPA ID No. AL7 210 020 562**

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District  
109 St. Joseph Street  
Mobile, Alabama 36602**

**Prepared by:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

**Delivery Order CK10  
Contract No. DACA21-96-D-0018  
IT Project No. 796887**

**November 2000**

**Revision 1**

The following Safety and Health Plan (SHP) has been designed for the methods presently contemplated by IT Corporation (IT) for execution of the proposed work. Therefore, the SHP may not be appropriate if the work is not performed by or using the methods presently contemplated by IT.

In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHP may have to be modified. Therefore, IT only makes representations or warranties as to the adequacy of the SHP for currently anticipated activities and conditions.

## **Site-Specific Safety and Health Plan Attachment Approval Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan attachment for the Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, Former Rifle Ranges, Parcels 110Q and 111Q, and Former Impact Area, Parcel 239Q-X, at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

---

Jeanne Yacoub, PE  
Project Manager

Date

---

William J. Hetrick, CIH  
Health & Safety Manager

Date

---

Jeff Tarr  
Site Coordinator

Date

## **Acknowledgements**

---

The final approved version of this site-specific safety and health plan (SSHP) attachment for the Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, Former Rifle Ranges, Parcels 110Q and 111Q, and Former Impact Area, Parcel 239Q-X, at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

---

Project Manager

---

Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.

---

Site Coordinator

---

Date

## Site-Specific Safety and Health Plan Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in, this site-specific safety and health plan attachment for the activities for the Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, Former Rifle Ranges, Parcels 110Q and 111Q, and Former Impact Area, Parcel 239Q-X, at Fort McClellan, Calhoun County, Alabama.

***Printed Name***

***Signature***

## Representing

***Date***This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

# Fort McClellan Gate Hours

Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.
---------------	---

## Fort McClellan Project Emergency Contacts

Fire Department (on post) .....	911
Fire Department (off post) .....	(256) 237-3541
Ambulance (off post) .....	911
Regional Medical Center .....	(256) 235-5121
Military Police (SSG Busch).....	(256) 848-5680, 848-4824
DOD Guard Force (Mr. Bolton) .....	(256) 848-5680, 848-4732
Anniston Police Department .....	(256) 238-1800
Chemical Agent Emergencies .....	(256) 895-1598
(Ken Barnett, CEHNC) .....	cell phone (256) 310-0604
UXO Emergencies .....	(256) 895-1598
(Ken Barnett, CEHNC) .....	cell phone (256) 310-0604
UXO Nonemergencies/Reporting Only (Ronald Levy) .....	(256) 848-3758
Baltzell Gate Guard Shack .....	(256) 848-5693, 848-3821
National Response Center & Terrorist Hotline .....	(800) 424-8802
Poison Control Center .....	(800) 462-0800
EPA Region IV .....	(404) 562-8725
Ronald Levy, Chief, FTMC Environmental Management.....	(256) 848-3758
Ellis Pope, U.S. Army Corps of Engineers .....	(334) 690-3077
Jeanne Yacoub, IT Project Manager .....	(770) 663-1429
Bill Hetrick, IT H&S Manager.....	(865) 690-3211, pager (888) 655-9529
Mike Moore, Fort McClellan Safety Officer .....	(256) 848-5433
Dr. Elaine Theriault, IT Occupational Physician .....	(800) 229-3674

## **Table of Contents**

---

	<b>Page</b>
List of Tables .....	ii
List of Figures .....	ii
List of Acronyms.....	iii
1.0 Site Work Plan Summary.....	1
2.0 Site Characterization and Analysis .....	2
2.1 Anticipated Hazards .....	2
2.2 General Site Information .....	4
3.0 Personal Protective Equipment .....	6
4.0 Site Monitoring .....	8
5.0 Activity Hazard Analysis .....	9

## ***List of Tables***

---

<b><i>Number</i></b>	<b><i>Title</i></b>	<b><i>Follows Page</i></b>
2-1	Toxicological Properties of Chemicals	4
4-1	Action Levels	8
4-2	Air Monitoring Frequency and Location	8
5-1	Activity Hazard Analysis	9

## ***List of Figures***

---

<b><i>Number</i></b>	<b><i>Title</i></b>	<b><i>Follows Page</i></b>
1-1	Organization Chart	1
5-1	Hospital Emergency Route	9



## ***List of Acronyms***

---

See Attachment 1, List of Abbreviations and Acronyms of the Field Sampling Plan Attachment contained in this binder.

## ***1.0 Site Work Plan Summary***

---

***Project Objective.*** The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama is to collect and analyze samples at the Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, Former Rifle Ranges, Parcels 110Q and 111Q, and Former Impact Area, Parcel 239Q-X.

### ***Project Tasks***

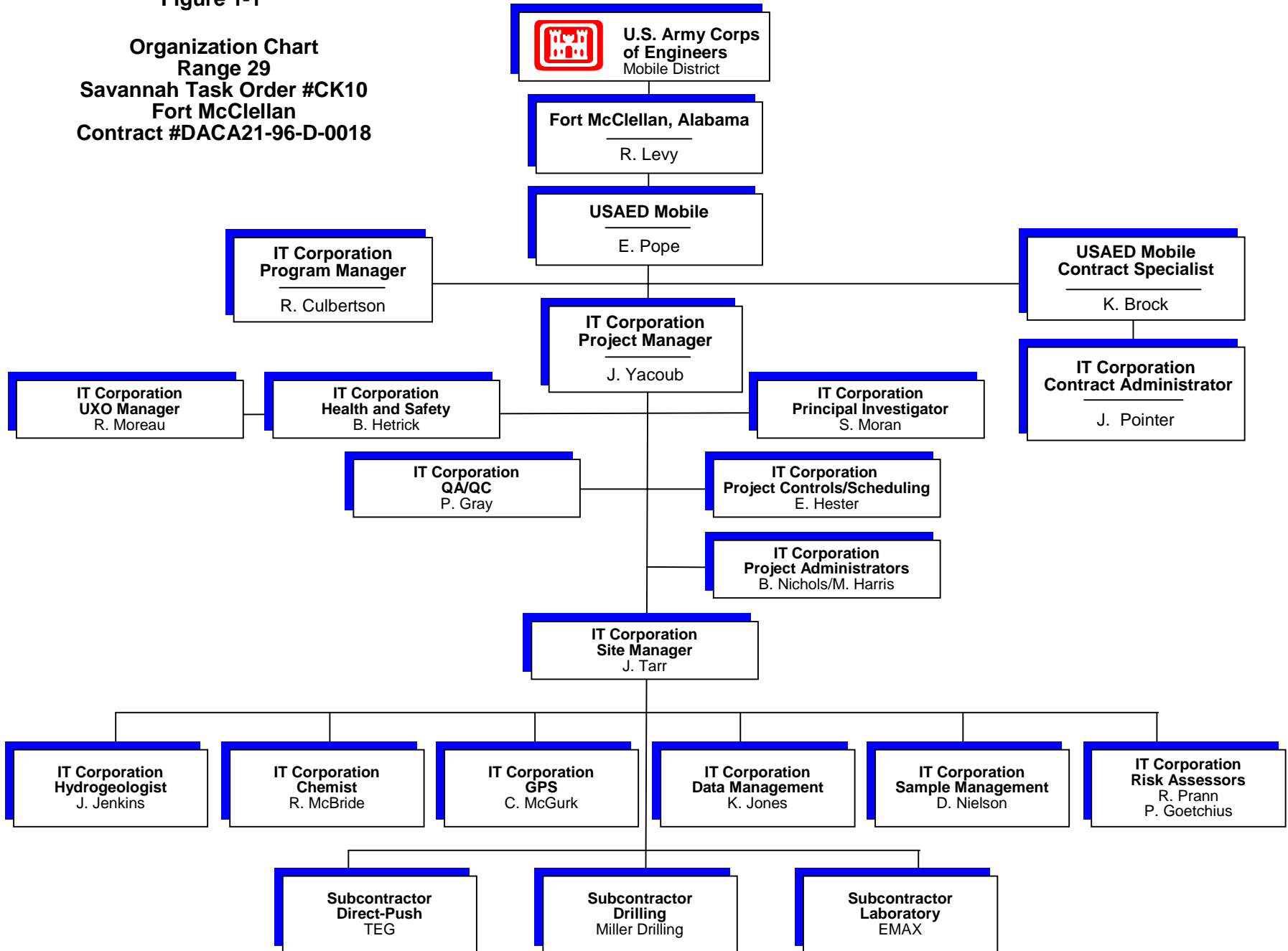
- Conduct a surface and near surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive drilling activity to determine the presence of potential downhole hazards.
- Install groundwater monitoring wells.
- Collect surface soil samples, subsurface soil samples, groundwater samples, surface water samples, and sediment samples.

***Personnel Requirements.*** Up to 15 employees. See Figure 1-1 for an organization chart.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific SHP (SSHP). This SSHP must be used in conjunction with the SHP, FTMC, Alabama.

Figure 1-1

Organization Chart  
Range 29  
Savannah Task Order #CK10  
Fort McClellan  
Contract #DACA21-96-D-0018



## ***2.0 Site Characterization and Analysis***

---

### ***2.1 Anticipated Hazards***

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). Site control with the use of specific work zones (support zone, contamination reduction zone, and exclusion zone) is addressed in Chapter 7.0 of Appendix A of the IT Corporation (IT), March 2000, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*.

Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, covers 182 acres of land. Former Rifle Ranges, Parcels 110Q and 111Q, and Impact Area, Parcel 239Q-X, all fall within the parcel boundaries of Range 29, Parcel 87Q-X. Therefore, the area that comprises all four sites will be referenced as Range 29 throughout the text.

Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, is approximately 3,600 feet long (east to west) by 2200 feet wide (north to south), and covers approximately 182 acres. The range has been in use from pre-1940 until recently. Ordnance known to be used at this range since 1977 include 45 caliber (caliber), 38 caliber, 9-millimeter pistol rounds, C4 explosives, trinitrotoluene, M-16 and M-60 rifle rounds, antitank (AT) 72 rounds, light AT weapons, and M-203 rounds. Dates and types of ordnance prior to 1977 are unknown. The buildings, towers, other structures, along with the mechanical pop-up targets at Range 29 have been removed. Structures still visible are gravel parking and training areas, as well as the concrete pads that were the foundations for the mechanical targets. Earthen mounds, approximately 4 feet in height, used as firing points, also exist at the western boundary of the parcel. There were 16 firing lanes with foxholes and sandbags used at Range 29 as mentioned in FTMC, Regulation No. 350-2. Other features still present at Range 29 include target tanks and jeeps at the 250-meter firing line as well as a culvert that extends approximately 800 feet from east to west separating the northern and southern section of the western portion of Range 29. Range 29 was observed to contain much UXO that included a highly explosive AT rocket, as reported to FTMC authorities by IT UXO personnel. The heavily wooded, downrange area presents a particular hazard due to

abundant UXO at the site.

During the site walkover completed by IT personnel at Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, several anomalies were noticed. The concrete pads used for mechanical target are evenly spaced along the 50, 100, 150, 200, and 250 meter firing lines. An ordnance impact area was observed just behind the mechanical target pads, at the 250 to 300 meter firing lines. Jeeps and tanks present at the 250-meter firing line were heavily impacted by ordnance. Types of ordnance observed are small caliber bullets, M203 40-millimeter grenade launcher rounds, and three inch mortar rounds. A fill area with reinforced concrete, brick and other types of construction debris was located at the center of the site. Numerous mounds are located just east of this area along with a 55-gallon drum. This area appears to be a former fill area, however the depth of fill could not be determined by visual sighting. Some of the mounds are at least 4 feet high and are approximately 40 feet in length. Several piles of debris were located just across the road that runs east to west at the eastern end of Range 29. A trash dumpster was also sighted located directly in center of the site along with two soil mounds. Due east of this area, towards the eastern parcel boundary a bullet impact area was observed. A moderate quantity of small caliber (0.30 and 0.30-06 caliber) bullets were found in this area.

Parcels 110Q and 111Q are Former Rifle Ranges. The date and type of ordnance fired at the Former Rifle Ranges is unknown; however, it is assumed that small caliber arms were used here. These ranges appear on the FTMC Archive Search Report Plate 5: World War II to 1950 map, and are identified as rifle ranges. These ranges also appear on a 1959 Army Service Map.

Former Rifle Range, Parcel 110Q, is approximately 2,100 feet in length and 300 feet wide. Parcel 110Q is located at the north portion of Range 29, and covers 15.3 acres. The bullet impact area located during the site walkover of Range 29 (east end of site) is probably associated with Former Rifle Range, Parcel 110Q.

Former Rifle Range, Parcel 111Q, is approximately 2,300 feet in length and 900 feet wide. Parcel 111Q is located at the southern portion of Range 29, and covers 46.5 acres. Anomalies encountered during the site visit include two large circular berms at the northeast end of the parcel. Each circular berm was approximately 30 to 40 feet in diameter and filled with water. It is suspected that these could have been the mortar/artillery firing points. Earthen target houses were located at the center section of parcel. A shack was located north of the target houses. Two north/south berms were also located at this parcel. One berm was located approximately 150 feet

west of the target houses. The berm located at the west end of the parcel is believed to have been the location for the firing line formerly used at this site.

Former Impact Area, Parcel 239Q-X, is located in the western portion of Range 29. Parcel 239Q-X was interpreted as an impact area on the 1949 Environmental Photographic Information Center aerial photo composite. Former Impact Area, Parcel 239Q-X, is approximately 1,100 feet long (north to south) and 600 wide (east to west), covering 13 acres. The firing point for this impact area could not be located.

Table 2-1 contains the toxicological and properties of chemicals anticipated or to be used at the Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, Former Rifle Ranges, Parcels 110Q and 111Q, and Former Impact Area, Parcel 239Q-X. Contaminants of concern at the area include lead, cyclonite (RDX), and toluene.

The possibility of UXO exists at Range 29; therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at the Range 29, Former Weapons Demonstration Range, Parcel 87Q-X, Former Rifle Ranges, Parcels 110Q and 111Q, and Former Impact Area, Parcel 239Q-X. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

## **2.2 General Site Information**

**Site Location.** Range 29 is located in the southeastern portion of Central Main Post. It is south of Fifth Avenue, due west of Holloway Hill, and bordered to the east by Rocky Hollow Road.

**Duration of Planned Employee Activity.** Employee activity duration is 2 months.

**Pathways for Hazardous Substance Dispersion.** Possible pathways for hazardous substances in the area are groundwater, surface water, sediment, and soils.

**Site Topography.** The elevation of Range 29 varies from 890 feet to 1,100 feet (National Geodetic Vertical Datum of 1929). Physical features of Range 29 include two intermittent

**Table 2-1**  
**Toxicological Properties of Chemicals**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 1 of 3)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Type & Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
CycloniteXhigh explosive (RDX) [121-82-4]	NA	NA	Inh Ing Con	Allergic skin reaction; irritation of the eyes; prolonged exposure to dust causes convulsions or unconsciousness; chronic effects unknown; bone marrow and liver damage.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	NA 0.5 mg/m <sup>3</sup> (skin)	NA NA	PEL TLV	ND
Lead inorganic dusts & fumes (as Pb) [7439-92-1]	NA	NA	Inh Ing Con	Weakness, lassitude, insomnia; facial pallor; eye pallor, low body weight, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremors; wrist and ankle paralysis; brain damage; kidney damage; irritated eyes; hypotension.	Eye: Irrigate immediately Skin: Soap flush promptly Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m <sup>3</sup> 0.05 mg/m <sup>3</sup> (NIC)  (CA - See 29 CFR 1910.1025)	NA NA	PEL TLV	100 mg/m <sup>3</sup> (as Pb)
RDX [See Cyclonite (RDX)]				[See Cyclonite (RDX)]					

**Table 2-1**  
**Toxicological Properties of Chemicals**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 2 of 3)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Type & Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
2,4,6-Trinitrotoluene (TNT)  [118-96-7]	10.59	odorless	Inh Abs Ing Con	Liver damage, jaundice; cyanosis; sneezing coughing, sore throat; peripheral neuropathy, muscular pain; kidney damage; cataract; sensitive dermatitis; leukocytosis; anemia; cardiac irregularities.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	1.5 mg/m <sup>3</sup> (skin) 0.1 mg/m <sup>3</sup> (skin)	NA NA	PEL TLV	500 mg/m <sup>3</sup>

<sup>a</sup>IP = Ionization potential (electron volts).

<sup>b</sup>Route: Inh = Inhalation; Abs = Skin absorption; Ing = Ingestion; Con = Skin and/or eye contact.

<sup>c</sup>TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.

<sup>d</sup>STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.

<sup>e</sup>Source: PEL = Permissible Exposure Limit (OSHA - 29 CFR 1910.1000, Table Z); TLV = Threshold Limit Value (ACGIH); NIOSH = National Institute for Occupational Safety and Health; WEEL = Workplace Environmental Exposure Level (AIHA).

<sup>f</sup>IDLH (NIOSH) = Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

ppm = Parts per million

mg/m<sup>3</sup> = Milligrams per cubic meter

skin = Danger of cutaneous absorption

ND = No evidence could be found for the existence of an IDLH (National Institute for Occupational Safety and Health Pocket Guide to Chemical Hazards, Pub. No. 94-116, June 1994)

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable or not available.

LEL = Lower explosive limits.

LC<sub>50</sub> = Lethal concentration in air for 50 percent of population tested.

LD<sub>50</sub> = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).



**Table 2-1**  
**Toxicological Properties of Chemicals**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 3 of 3)

References:

Guide to Occupational Exposure Values - 1997, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).  
Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.  
Micromedex Tomes Plus (R) System, 1995, Micromedex, Inc.  
Pocket Guide to Chemical Hazards, Pub. No. 94-116, June 1994, National Institute for Occupational Safety and Health (NIOSH).  
Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association (AIHA), 1989.  
Workplace Environmental Exposure Levels, American Industrial Hygiene Association (AIHA), 1995.

streams that originate on the site but leave the site, one flows to the north and the other flows to the south into South branch of Cane Creek. Topographic ridges, including Holloway Hill, border the site to the east and southeast, with elevations reaching 1,150 feet. The eastern half of Range 29 is wooded while the western half remains mostly barren with sparse trees and grass. Vehicular access is easily obtained to Range 29.

### **3.0 Personal Protective Equipment**

---

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided.

Task	Initial Level of PPE
Staging equipment	Level D
Collecting samples	Modified Level D*
Install monitoring wells	Modified Level D*

\*Initial level will be raised to Level C or higher if air monitoring results for volatile organic hydrocarbons in the worker's breathing zone (BZ) are greater than action levels.

**Level D.** The minimal level of protection that will be required of IT personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: UXO personnel should not wear hard hats and steel-toed shoes when engaged in ordnance operations unless a significant overhead hazard exists. Where overhead hazards exist, a chin strap will be worn with hard hats to prevent accidental falling of hard hat.

**Modified Level D.** The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent
- Latex boot covers
- Nitrile, or latex inner gloves; leather work gloves (outer) when necessary
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to modified Level D PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet, and a face shield.

Note: UXO personnel should not wear hard hats and steel-toed shoes when engaged in ordnance operations unless a significant overhead hazard exists. Where overhead hazards exist, a chin strap will be worn with hard hats to prevent accidental falling of hard hat.

**Level C.** Level C protection will not be used unless air-monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- X National Institute of Occupational Safety and Health-approved full-face, air-purifying respirators equipped with organic vapor/acid gas/P100 cartridge
- X Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- X Nitrile gloves (outer)
- X Latex or lightweight nitrile gloves (inner)
- X Neoprene steel-toed boots or steel-toed safety boots with polyvinyl chloride over booties
- X Hard hat
- X Hearing protection (when working near/adjacent to operating equipment)

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet, and a face shield.

## 4.0 Site Monitoring

---

Potential environmental contaminants of concern resulting from Range 29 operations are lead, RDX, and trinitrotoluene. Table 4-1 contains action levels for site monitoring at the sites.

**Chemical.** Monitoring will be performed by the site safety and health officer during the performance of ground intrusive operations. A calibrated flame ionization detector (i.e., OVA 128 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the work areas and BZs to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. Table 4-2 contains the air monitoring frequency and location for site monitoring at the work sites.

**Unexploded Ordnance.** UXO safety will be achieved by employing UXO specialists to ensure that field personnel do not come into contact with UXO. In areas where UXO is suspected to exist, the UXO specialists will perform the following UXO avoidance operations.

- X **Area UXO Surveys Using Magnetometers.** During this operation UXO on the surface will be detected and marked for avoidance during field operations. Metal objects just below the surface (within 2 feet) will also be marked to indicate the potential hazard.
- X **Downhole UXO Surveys.** UXO specialists will perform downhole magnetometer surveys to detect metal objects in the path of the boring apparatus until undisturbed soils are reached. The boring location will be moved if subsurface metal objects are detected.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it. The UXO hazard will be dealt with by appropriate personnel according to the procedures addressed in the site-specific UXO safety plan attachment.

**Table 4-1**  
**Action Levels**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C PPE

Analyte	Action Level	Required Action <sup>a</sup>
Volatile Organic Compounds (VOC)	≥ 10 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B.
Oxygen	≥ 20%, ≤23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

When in Level D Modified/D PPE

Analyte	Action Level	Required Action <sup>b</sup>
VOCs	≥ 5 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE.
Oxygen	≥ 20%, ≤23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

**Table 4-1**  
**Action Levels**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

When in Support Zone

Analyte	Action Level	Required Action
VOCs	$\geq 1$ ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

<sup>a</sup> Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

<sup>b</sup> Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

**No one is permitted to downgrade levels of PPE without authorization from the H&S manager.**

**Table 4-2**  
**Air Monitoring Frequency and Location**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment	OV Monitor	Initially for area	Breathing zone (BZ) of employees
Land Survey	OV Monitor	Initially for area	BZ of employees
Sampling (water, sediment, and soil)	OV Monitor LEL/O <sub>2</sub> Monitor	Continuously Continuously	BZ of employees and/or work area
Installing monitoring wells	OV Monitor LEL/O <sub>2</sub> Monitor	Continuously Continuously	BZ of employees and/or work area

OV = Organic vapor.

LEL/O<sub>2</sub> = Lower explosive level/oxygen.



## ***5.0 Activity Hazard Analysis***

---

The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- X Setup of equipment and general field activities
- X Land survey
- X Soil, sediment, and water sampling
- X Installation of monitoring wells.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. Directions to the hospital are provided in Figure 5-1.

**Table 5-1**

**Activity Hazard Analysis**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 1 of 15)

Activity	Potential Hazards	Recommended Controls
Staging equipment	Unexploded ordnance (UXO)	X UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance. See site-specific safety and health plans (SSHP) to determine if required.
	Slip, trip, and fall hazards	X Determine best access route before transporting equipment. X Practice good housekeeping; keep work area picked up and clean as feasible. X Continually inspect the work area for slip, trip, and fall hazards. X Look before you step ensure safe and secure footing.
	Heavy lifting	X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	X Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	X Wear safety glasses/goggles; ensure that eyewash is in proper working condition.
	Pinch points	X Keep hands, fingers, and feet clear of moving/suspended materials and equipment. X Beware of contact points. X Stay alert at all times!
	Cuts/bruises	X Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	X Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	X Wear light colored clothing (can see ticks better). X Mow vegetated and small brush areas. X Wear insect repellent. X Wear long sleeves and long pants. X Visually check oneself promptly and frequently after exiting the work area.
	Fire	X Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 2 of 15)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>X Work area will be barricaded/demarcated.</li> <li>X Equipment will be laid out in an area free of traffic flow.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>X Label all containers as to contents and dispose of properly.</li> <li>X Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>X Sound levels above 85 decibels (dBA) mandate hearing protection.</li> </ul>
	Lighting	<ul style="list-style-type: none"> <li>X Adequate lighting will be provided to ensure a safe working environment.</li> </ul>
	Cold stress	<ul style="list-style-type: none"> <li>X Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>X Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>X Remove wet clothing promptly.</li> <li>X Take breaks in warm areas.</li> <li>X Reduce work periods as necessary.</li> <li>X Layer work clothing.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>X Avoid plant areas if possible.</li> <li>X Wear long sleeves and long pants.</li> <li>X Promptly wash clothing that has contacted poisonous plants.</li> <li>X Wash affected areas immediately with soap and water.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>X Keep the skin clean and dry.</li> <li>X Change perspiration-soaked clothing, as necessary.</li> <li>X Bathe at end of work shift or day.</li> <li>X Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>X Drink plenty of cool fluids even when not thirsty.</li> <li>X Provide cool fluid for work crews.</li> <li>X Move victim to shaded, cool area.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 3 of 15)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Heat exhaustion	<ul style="list-style-type: none"> <li>X Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>X Set up work/rest periods.</li> <li>X Use the buddy system.</li> <li>X Allow workers time to acclimate.</li> <li>X Have ice packs available for use.</li> <li>X Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>X Evaluate possibility of night work.</li> <li>X Perform physiological monitoring on workers during breaks.</li> <li>X Wear body cooling devices.</li> </ul>
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>X Work area will be barricaded/demarcated.</li> <li>X Equipment will be laid out in an area free of traffic flow.</li> <li>X Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.</li> <li>X Barriers shall be used to protect workers from vehicular traffic.</li> <li>X Barriers shall be used to guard excavations adjacent to streets or roadways.</li> <li>X Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided.</li> <li>X Heavy equipment shall have backup alarms.</li> </ul>
	Forklift operations	<ul style="list-style-type: none"> <li>X Use qualified and trained forklift operators.</li> <li>X The operator shall not exceed the load capacity rating for the forklift.</li> <li>X The load capacity shall be clearly visible on the forklift.</li> <li>X Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Portable electric tools	<ul style="list-style-type: none"> <li>X Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service.</li> <li>X Portable electric tools and all cord and plug connected equipment shall be protected by a ground fault circuit interrupter (GFCI) device.</li> <li>X Electrical tools shall be inspected daily prior to use.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 4 of 15)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Extension cords	<ul style="list-style-type: none"> <li>X Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service.</li> <li>X Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic.</li> <li>X Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.).</li> <li>X Cords shall be designed for hard duty.</li> <li>X Cords shall be inspected daily.</li> </ul>
	Lightning strikes	<ul style="list-style-type: none"> <li>X Whenever possible, halt activities and take cover.</li> <li>X If outdoors, stay low to the ground.</li> <li>X Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).</li> <li>X Seek shelter in a building if possible.</li> <li>X Stay away from windows.</li> <li>X If available, crouch under a group of trees instead of one single tree.</li> <li>X Keep all body parts in contact with the ground as close as possible.</li> <li>X Remain 6 feet away from tree trunk if seeking shelter beneath tree(s).</li> <li>X If in a group, keep 6 feet of distance between people.</li> </ul>
	Thunderstorms, tornadoes	<ul style="list-style-type: none"> <li>X Listen to radio or TV announcements for pending weather information.</li> <li>X Cease field activities during thunderstorm or tornado warnings.</li> <li>X Seek shelter. Do not try to outrun a tornado.</li> </ul>
Surveying	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>X Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field.</li> <li>X Provide adequate lighting in all work areas.</li> <li>X Whenever possible, avoid routing cords and hoses across walking pathways.</li> <li>X Flag or cover inconspicuous holes to protect against falls.</li> <li>X Work areas will be kept clean and orderly.</li> <li>X Garbage and trash will be disposed of daily in approved refuse containers.</li> <li>X Tools and accessories will be properly maintained and stored.</li> <li>X Work areas and floors will be kept free of dirt, grease, and slippery materials.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>X UXO specialists will perform UXO surface clearance for UXO avoidance.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 5 of 15)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Traffic accidents	<ul style="list-style-type: none"> <li>X Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians.</li> <li>X If working adjacent to roadways, have workers wear fluorescent orange vests.</li> <li>X Use warning signs or lights to alert oncoming traffic.</li> <li>X Assign flag person(s) if necessary to direct local traffic.</li> <li>X Set up temporary parking locations outside the immediate work area.</li> <li>X Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits.</li> <li>X Pedestrians have the right-of-way.</li> <li>X Wear seat belts when vehicles are in motion.</li> </ul>
	Wildlife hazards	<ul style="list-style-type: none"> <li>X Workers should be cautious when driving through the site in order to avoid encounters with passing animals.</li> </ul>
	Biological hazards	<ul style="list-style-type: none"> <li>X Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, and copperheads).</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>X Wear light colored clothing (can see ticks better).</li> <li>X Mow vegetated and small brush areas.</li> <li>X Wear insect repellent.</li> <li>X Wear long sleeves and long pants.</li> <li>X Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>X Avoid plant areas if possible.</li> <li>X Wear long sleeves and long pants.</li> <li>X Promptly wash clothing that has contacted poisonous plants.</li> <li>X Wash affected areas immediately with soap and water.</li> </ul>
Hydropunch sampling	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> <li>X All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition.</li> <li>X Equipment will be inspected before being put to use and at the beginning of each shift.</li> <li>X Faulty/unsafe equipment will be tagged and if possible locked out.</li> <li>X Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 6 of 15)

Activity	Potential Hazards	Recommended Controls
Hydropunch sampling (continued)	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> <li>X Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.</li> <li>X All mobile equipment and areas in which they are operated shall be adequately illuminated.</li> <li>X Whenever the equipment is parked, the parking brake shall be set.</li> <li>X Equipment parked on inclines will have the wheels chocked.</li> <li>X Inspect brakes and tire pressure on drill rig before staging for work.</li> <li>X Obtain trenching/drilling permit prior to operation.</li> </ul>
	Inexperienced operator	<ul style="list-style-type: none"> <li>X Machinery and mechanized equipment shall be operated only by designated personnel.</li> <li>X Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Jacks/outriggers	<ul style="list-style-type: none"> <li>X Ensure proper footing and cribbing.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>X UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>X Remove unsecured tools and materials before raising or lowering the derrick.</li> <li>X Stay alert and clear of materials suspended overhead.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>X Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>X Stay alert at all times!</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>X Mechanized equipment shall be shut down prior to and during fueling operations.</li> <li>X Have fire extinguishers inspected and readily available.</li> </ul>
	Fall hazards	<ul style="list-style-type: none"> <li>X Personnel are not allowed to work off of machinery or use them as ladders.</li> <li>X Use fall protection when working above 6 feet.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>X Hearing protection is mandatory above 85 dBA.</li> </ul>
	Contact with rotating or reciprocating machine part	<ul style="list-style-type: none"> <li>X Use machine guards; use long-handled shovels to remove auger cuttings.</li> <li>X Safe lockout procedures for maintenance work.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 7 of 15)

Activity	Potential Hazards	Recommended Controls
Hydropunch sampling (continued)	Heavy lifting	X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
	Slip, trip, and fall hazards	X Practice good housekeeping; keep work area picked up and clean as feasible. X Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	X Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.
Groundwater, sediment, and surface water sampling	Cross-contamination and contact with potentially contaminated materials	X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Avoid skin contact with water. X Handle samples with care. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	UXO	X UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.
	Cut hazards	X Use care when handling glassware. X Wear adequate hand protection.
	Hazard communication	X MSDSs shall be obtained for chemicals brought on site. X Label all containers as to contents.
	Strains/sprains	X Use the proper tool for the job being performed. X Get assistance if needed. X Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Drowning	X Personal flotation devices will be worn when sampling on or adjacent to the water.



**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 8 of 15)

Activity	Potential Hazards	Recommended Controls
Groundwater, sediment, and surface water sampling (continued)	Spills/residual materials	X Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	X Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	X Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.
Soil boring and surface/subsurface sampling	Cross-contamination and contact with potentially contaminated materials	X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Avoid skin contact with paint. X Handle samples with care. X Only essential personnel will be in the work area. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	X Use care when handling glassware. X Wear adequate hand protection.
	Slip, trip, and fall hazards	X Practice good housekeeping; keep work area picked up and clean as feasible. X Continually inspect the work area for slip, trip, and fall hazards.
	UXO	X UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.
	Bees, spiders, and snakes	X Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas. X Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.
	Poison ivy/oak/sumac	X Avoid plant areas if possible. X Wear long sleeves and long pants. X Promptly wash clothing that has contacted poisonous plants. X Wash affected areas immediately with soap and water.

**Table 5-1**

**Activity Hazard Analysis**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 9 of 15)

Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling (continued)	Cold stress	<ul style="list-style-type: none"> <li>X Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>X Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>X Remove wet clothing promptly.</li> <li>X Take breaks in warm areas.</li> <li>X Reduce work periods as necessary.</li> <li>X Layer work clothing.</li> </ul>
	Access/egress hazards	<ul style="list-style-type: none"> <li>X Use qualified and trained bushhog operator.</li> <li>X Keep employees out of the bushhog work area.</li> <li>X Utilize good housekeeping practices.</li> <li>X Keep aisleways, pathways, and work areas free of obstruction.</li> <li>X Clean ice or snow off of walkways or work stations.</li> <li>X Use appropriate footwear for the task assigned.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>X Keep the skin clean and dry.</li> <li>X Change perspiration-soaked clothing, as necessary.</li> <li>X Bathe at end of work shift or day.</li> <li>X Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>X Drink plenty of cool fluids even when not thirsty.</li> <li>X Provide cool fluid for work crews.</li> <li>X Move victim to shaded, cool area.</li> </ul>
	Heat exhaustion	<ul style="list-style-type: none"> <li>X Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>X Set up work/rest periods.</li> <li>X Use the buddy system.</li> <li>X Allow workers time to acclimate.</li> <li>X Have ice packs available for use.</li> <li>X Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>X Evaluate possibility of night work.</li> <li>X Perform physiological monitoring on workers during breaks.</li> <li>X Wear body cooling devices.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 10 of 15)

Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling (continued)	Lightning strikes	<ul style="list-style-type: none"> <li>X Whenever possible, halt activities and take cover.</li> <li>X If outdoors, stay low to the ground.</li> <li>X Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).</li> <li>X Seek shelter in a building if possible.</li> <li>X Stay away from windows.</li> <li>X If available, crouch under a group of trees instead of one single tree.</li> <li>X Keep all body parts in contact with the ground as close as possible.</li> <li>X If in a group, keep 6 feet of distance between people.</li> </ul>
	Thunderstorms, tornadoes	<ul style="list-style-type: none"> <li>X Listen to radio or TV announcements for pending weather information.</li> <li>X Cease field activities during thunderstorms or tornado warnings.</li> <li>X Seek shelter. Do not try to outrun a tornado.</li> </ul>
Installation of monitoring wells	Overhead hazards	<ul style="list-style-type: none"> <li>• Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.</li> </ul>
	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> <li>• All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition.</li> <li>• Equipment will be inspected before being put to use and at the beginning of each shift.</li> <li>• Faulty/unsafe equipment will be tagged and if possible locked out.</li> <li>• Drill rigs and geoprobes shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Move victim to shaded, cool area.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 11 of 15)

Activity	Potential Hazards	Recommended Controls
Installation of monitoring wells (continued)	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, and oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the "buddy system."</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> </ul>
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> <li>• Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.</li> <li>• All mobile equipment and areas in which they are operated shall be adequately illuminated.</li> <li>• Aboveground and belowground utilities will be located prior to staging equipment.</li> <li>• Whenever the equipment is parked, the parking brake shall be set.</li> <li>• Equipment parked on inclines will have the wheels chocked.</li> <li>• Inspect brakes and tire pressure on drill rig before staging for work.</li> </ul>
	Inexperienced operator	<ul style="list-style-type: none"> <li>• Machinery and mechanized equipment shall be operated only by designated personnel.</li> <li>• Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.</li> </ul>
	Jacks/outriggers	<ul style="list-style-type: none"> <li>• Ensure proper footing and cribbing.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Remove unsecured tools and materials before raising or lowering the derrick.</li> <li>• Stay alert and clear of materials suspended overhead.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>• Stay alert at all times!</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>• Mechanized equipment shall be shut down prior to and during fueling operations.</li> <li>• Have fire extinguishers inspected and readily available.</li> <li>• Obtain a Hot Work Permit, per IT Procedure HS 314 (May 19, 1999) for any operation which could act as an ignition source.</li> </ul>
	Fall hazards	<ul style="list-style-type: none"> <li>• Personnel are not allowed to work off of machinery or use them as ladders.</li> <li>• Use fall protection when working above 6 feet.</li> </ul>

**Table 5-1**  
**Activity Hazard Analysis**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 12 of 15)

Activity	Potential Hazards	Recommended Controls
Installation of monitoring wells (continued)	Noise	<ul style="list-style-type: none"> <li>Hearing protection is mandatory above 85 dBA.</li> </ul>
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none"> <li>Use machine guards; use long-handled shovels to remove auger cuttings.</li> <li>Safe lockout procedures for maintenance work.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>Practice good housekeeping, keep work area picked up and clean as feasible.</li> <li>Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Real time air monitoring will take place. Proper personal protective clothing and equipment will be utilized.</li> <li>Stop immediately at any sign of obstruction.</li> <li>Do not breathe air surrounding boring any more than necessary.</li> <li>Upgrade to respirator if necessary.</li> <li>Avoid skin contact with soil cuttings. Wear gloves.</li> <li>Stay clear of moving parts of drill rig and geoprobe.</li> </ul>
	Drum handling	<ul style="list-style-type: none"> <li>Be careful not to breathe air from around open drum any more than necessary. Monitor with photoionization detector/flame ionization detector (PID/FID) equipment and upgrade to respirator if necessary.</li> <li>When filling a drum (with either soil or water), be careful not to make contact with the contained waste. Wear appropriate gloves. Make sure lid or bung of drum is secure.</li> <li>If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots.</li> <li>When using a drum dolly, make sure straps and lid catch are securely attached. Leverage properly when tilting drum. Be sure toes stay away from drum.</li> </ul>
Moving and shipping collected samples	Heavy lifting	X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
	Pinch points	X Keep hands, fingers, and feet clear of moving/suspended materials and equipment. X Beware of contact points. X Stay alert at all times!
	Cut hazards	X Wear adequate hand protection. Use care when handling glassware.

**Table 5-1**

**Activity Hazard Analysis**

**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 13 of 15)

Activity	Potential Hazards	Recommended Controls
Moving and shipping collected samples (continued)	Hazard communication	X Label all containers as to contents and associated
	Heavy lifting	X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
Material storage	Flammable and combustible liquids	X Identify all hazardous materials with proper labels. X Store in NO SMOKING AREA. X Fire extinguisher readily available. X Transfer only when properly grounded and bonded.
Disposal of investigation-derived waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	X Use qualified and trained forklift operators. X The operator shall not exceed the load capacity rating for the forklift. X The load capacity shall be clearly visible on the forklift. X Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Cross-contamination and contact with potentially contaminated materials	X Stop immediately at any sign of obstruction. X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	X Use care when handling glassware. X Wear adequate hand protection.
High-pressure water jetting operations	Heavy lifting	X Use proper lifting techniques. X Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.

**Table 5-1**

**Activity Hazard Analysis**  
**Range 29**  
**Fort McClellan, Calhoun County, Alabama**

(Page 14 of 15)

Activity	Potential Hazards	Recommended Controls
High-pressure water jetting operations (continued)	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>X Good housekeeping shall be implemented.</li> <li>X The work area shall be kept clean as feasible.</li> <li>Inspect the work area for slip, trip, and fall hazards.</li> </ul>
	Fueling	<ul style="list-style-type: none"> <li>X Only approved safety cans shall be used to store fuel.</li> <li>X Do not refuel equipment while it is operating.</li> <li>X Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>
	Faulty or damaged equipment	<ul style="list-style-type: none"> <li>X Equipment shall be inspected before being placed into service and at the beginning of each shift.</li> <li>X Preventive maintenance procedures recommended by the manufacturer shall be followed.</li> <li>X A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>
	High-pressure water	<ul style="list-style-type: none"> <li>X Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate).</li> <li>X One standby person shall be available within the vicinity of the pump during jetting operation.</li> <li>X The work area shall be isolated and adequate barriers will be used to warn other site personnel.</li> </ul>
	Unqualified operators	<ul style="list-style-type: none"> <li>X Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.</li> </ul>
	Out of control equipment	<ul style="list-style-type: none"> <li>X No machinery or equipment is permitted to run unattended.</li> <li>X Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>X Sound levels above 85 dBA mandates hearing protection by nearby site personnel.</li> </ul>
	Activation during repairs	<ul style="list-style-type: none"> <li>X All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>X Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>X Stay alert and clear of materials suspended</li> </ul>

**Table 5-1**

**Activity Hazard Analysis**

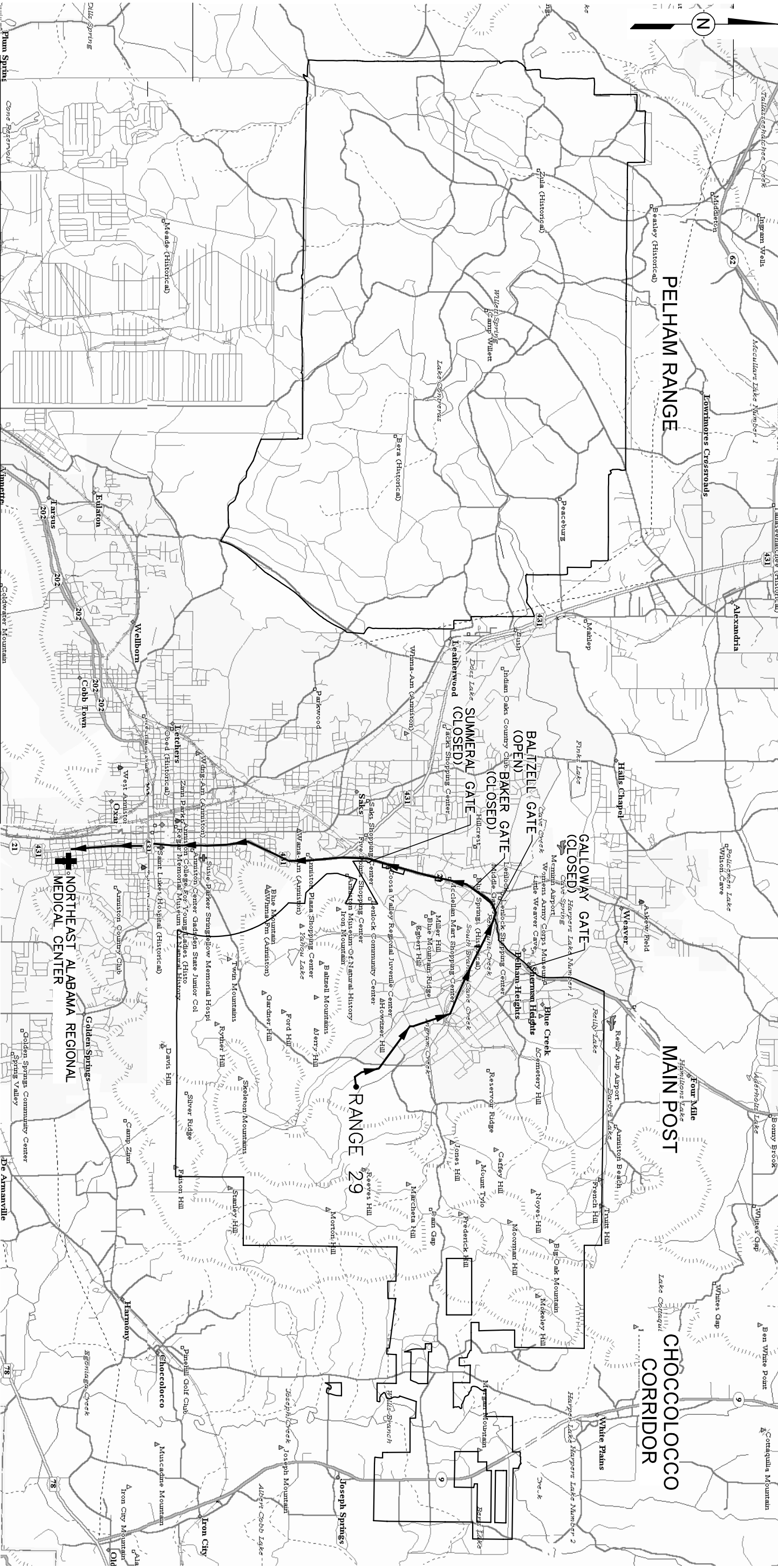
**Range 29**

**Fort McClellan, Calhoun County, Alabama**

(Page 15 of 15)

Activity	Potential Hazards	Recommended Controls
High-pressure water jetting operations (continued)	Falling objects	X Hard hats are required by site personnel. X Stay alert and clear of material suspended overhead.
	Flying debris	X Impact-resistant safety glasses with side shields are required.
	Contact with potentially contaminated materials	X All site personnel will wear the appropriate PPE.





PELHAM RANGE

MAIN POST

CHOCOLOCOCO CORRIDOR

LEGEND:

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITAL
- INVESTIGATION SITES

DRIVING DIRECTIONS FROM BALTZELL GATE ROAD TO THE NORTHEAST ALABAMA MEDICAL CENTER

- LEAVING FORT MCCELLELLAN ON BALTZELL GATE ROAD, TURN LEFT (SOUTH) ONTO AL HWY 21
- GO ~ 2.5 MILES WHERE AL HWY 21 MERGES WITH U.S. HWY 431 AND CONTINUE SOUTH
- CONTINUE SOUTH ON AL21/US431 FOR ~ 2.7 MILES
- TURN LEFT ONTO EAST 10th STREET
- GO ~ 0.2 MILE TO MEDICAL CENTER ON RIGHT

FIGURE 5-1  
HOSPITAL EMERGENCY ROUTE

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT MCCELLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018